BOSTON GAS COMPANY
D.T.E. 03-40

SIXTH SET OF INFORMATION REQUESTS OF THE DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY TO BOSTON GAS COMPANY

Pursuant to 220 C.M.R. § 1.06(6)(c), the Department of Telecommunications and Energy ("Department") submits to Boston Gas Company ("Boston Gas" or "Company") the following Information Requests:

INSTRUCTIONS

The following instructions apply to this set of Information Requests and all subsequent Information Requests issued by the Department to the Company in this proceeding.

1. Each request should be answered in writing on a separate, three-hole punch page with a recitation of the request, a reference to the request number, the docket number of the case and the name of the person responsible for the answer.

2. Do not wait for all answers to be completed before supplying answers. Provide the answers as they are completed.

3. These requests shall be deemed continuing so as to require further supplemental responses if the Company or its witness receives or generates additional information within the scope of these requests between the time of the original response and the close of the record in this proceeding.

4. The term "provide complete and detailed documentation" means:

   Provide all data, assumptions and calculations relied upon. Provide the source of and basis for all data and assumptions employed. Include all studies, reports and planning documents from which data, estimates or assumptions were drawn and support for how

the data or assumptions were used in developing the projections or estimates. Provide and explain all supporting work-papers.

5. The term "document" is used in its broadest sense and includes, without limitation, writings, drawings, graphs, charts, photographs, phono-records, microfilm, microfiche, computer printouts, correspondence, handwritten notes, records or reports, bills, checks, articles from journals or other sources and other data compilations from which information can be obtained and all copies of such documents that bear notations or other markings that differentiate such copies from the original.

6. If any one of these requests is ambiguous, notify the Hearing Officer so that the request may be clarified prior to the preparation of a written response.

7. Please file one copy of the responses with Mary Cottrell, Secretary of the Department and on all parties; also submit one (1) copy of the responses to Caroline M. Bulger, Hearing Officer, one (1) copy of the responses to John J. Geary, Hearing Officer, one (1) copy of the responses to Sean Hanley, Assistant Director - Rates and Revenue Requirements Division, one (1) copy of the responses to Paul E. Osborne, Assistant Director - Rates and Revenue Requirements Division, two (2) copies of the responses to A. John Sullivan, Rates and Revenue Requirements Division, one (1) copy to Andreas Thanos, Assistant Director, Gas Division; **and one (1) copy to Caroline M. Bulger**.

8. In addition to filing, all non-proprietary responses should be submitted by e-mail to dte.efiling@state.ma.us and to the e-mail address of any party required to be served.

INFORMATION REQUESTS

DTE 6-1 Refer to Exh. KEDNE/JFB-1, at 4, 21. For each of the following, please:

(a) Demonstrate that under the performance-based regulation ("PBR") plan approved by the Department in Boston Gas Company, D.T.E. 96-50 (1996) ("D.T.E. 96-50"), the Company achieved cost reduction and became more efficient regarding its distribution business. Discuss the specific areas where the Company achieved cost reductions, cost containment, and efficiency gains;

(b) Calculate the dollar amount of the total cost reduction achieved by the Company since the issuance of D.T.E. 96-50. Break down the total cost savings by cost category;

(c) Calculate the annual total cost growth since the issuance of D.T.E. 96-50 and compare this with the annual total cost growth during the ten years prior to D.T.E 96-50. Indicate which costs were moved from base rates to the Cost of Gas Adjustment as a result of the Company's rate unbundling in D.T.E. 96-50. Show the results graphically using either line graphs or bar charts;

(d) For each cost category, calculate the annual cost growth since the issuance of D.T.E. 96-50 and compare this with the annual cost growth during the ten years prior to D.T.E 96-50. Indicate the costs that are distribution-related and those that are not. Show the results graphically using either line graphs or bar charts;

(e) Calculate the growth in annual base distribution revenues since the issuance of D.T.E. 96-50 and compare this with the growth in annual base distribution revenues during the ten years prior to D.T.E. 96-50. Show the results graphically using either line graphs or bar charts;

(f) Using the results of (c) and (e) above, compare the annual total cost growth with the growth in annual base distribution revenues using either line graphs or bar charts; and

(g) Compare the results of (c), (d), and (e) above, with the rate of inflation for the period in question using line graphs or bar charts. Indicate the sources of the inflation data.

DTE 6-2 Refer to Exh. KEDNE/JFB-1, at 4, 21. Please state how much revenue growth has been due to (a) increased use-per-customer, and (b) customer growth since the issuance of D.T.E. 96-50 and during the ten years prior to D.T.E 96-50.

DTE 6-3 Refer to Exh. KEDNE/JFB-1, at 22. Please discuss the steps that the Company has taken to reduce the relative shares of (1) wages and salaries, and (2) operation and maintenance expenses in total cost, both without affecting service quality and service reliability.

DTE 6-4 Refer to Exh. KEDNE/JFB-1, at 23. Describe in detail the Company's objective(s) for the proposed PBR plan and the steps that it proposes to take to achieve the objective(s).

D.T.E. 6-5 Refer to Exh. KEDNE/JFB-1, at 22. For each of the following please:

(a) Demonstrate that the Company will achieve cost savings and/or cost containment and efficiency gains under the proposed PBR plan given the "Department's stated intent in pursuing PBR plans has been to provide utilities with the incentive and opportunity to aggressively pursue cost-containment measures;"

(b) Outline the areas of the expected cost savings and/or cost containment and efficiency gains under the proposed PBR plan; and

c) Quantify the cost savings and efficiency gains expected under the proposed PBR plan.

DTE 6-6 Refer to Exh. KEDNE/JFB-1, at 22-25. Please indicate whether the cost savings or cost containment and efficiency gains that the Company expects to achieve under the proposed PBR plan will be:

(a) Significant;

(b) Minimal;

(c) No cost savings/cost containment and efficiency gains expected.

Discuss in detail the reasons for the Company's selection.

DTE 6-7 Refer to Exh. KEDNE/JFB-1, at 20-27. Please demonstrate that the Company's proposed PBR plan satisfies the following criteria set forth by the Department by which PBR proposals for gas and electric companies would be evaluated (see Incentive Regulation, D.P.U. 94-158, at 58-64 (1995)). These criteria require that the PBR plan:

(a) Comply with Department regulations, unless accompanied by a request for a specific waiver;

(b) Be designed to serve as a vehicle to a more competitive environment and to improve the provision of monopoly services, while avoiding the cross-subsidization of competitive services with revenues derived from monopoly services;

(c) Not result in reductions in safety, service reliability or existing standards of customer service;

(d) Not focus excessively on "cost recovery" issues; i.e., if a proposal addresses a specific cost recovery issue, its proponent must demonstrate that these costs are exogenous to the company's operations;

(e) Focus on comprehensive results; i.e., broad-based proposals should satisfy this criterion more effectively than narrowly-targeted proposals;

(f) Be designed to achieve specific, measurable results by identifying, where appropriate, measurable performance indicators and targets that are not unduly subject to miscalculation or manipulation; and

(g) Provide a more efficient regulatory approach, thus reducing regulatory and administrative costs (proposals should present a timetable for program implementation and specify milestones and a program tracking/evaluation method).

DTE 6-8 Refer to Exh. KEDNE/JFB-1, at 24. Please provide the empirical basis for the Company's proposal of a consumer dividend of 0.15 percent. State the range of plausible values of a consumer dividend for Boston Gas under the proposed PBR plan that are "consistent with the theory of PBR and recognizes that productivity gains during the first PBR term are likely to be greater than those in successive terms."

DTE 6-9 Refer to Exh. KEDNE/JFB-1, at 26. Please provide the analysis supporting the Company's proposal that "individual exogenous costs would have to exceed $500,000 in a particular year in order for the Company to request recovery." Explain how the $500,000 threshold was established and state whether the threshold should be fixed or variable. Provide reasons for your answer.

DTE 6-10 Refer to Exh. KEDNE/JFB-1, at 27. Please state the theory of PBR referred to in Mr. Bodanza's testimony. Within the context of this theory, justify the Company's proposal that "the PBR Plan could be extended on a year-to-year basis beyond the initial five-year term … without further action by the Department."

DTE 6-11 Refer to Exh. KEDNE/JFB-1, at 27. For each of the following, please:

(a) Provide the theoretical basis for the five-year initial term of the PBR plan proposed by the Company; and

(b) Discuss the advantages and disadvantages of limiting the initial term of the PBR plan to five years versus limiting it to a longer period, e.g., ten years. The discussion should be from the perspective of both the Company and ratepayers. Provide any calculations and/or illustrations which support your answer.

DTE 6-12 Refer to Exh. KEDNE/JFB-1, at 27. Please submit copies of any other public utility commission decisions or orders to show how other jurisdictions have handled the renewal of PBR proposals that have expired. Limit the PBR proposals to those filed by gas and electric utilities. In your response, identify the utilities that are currently under a price-cap PBR plan.

DTE 6-13 Please demonstrate that cast iron replacement costs qualify for recovery as exogenous costs.

DTE 6-14 Please describe whether, how, and why the Company's PBR plan would change if the term of the plan were longer, for example ten years or fifteen years.

DTE 6-15 Please identify the criteria by which the Company evaluated the effectiveness of the first PBR plan under DTE 96-50 and provide the results of that evaluation. State whether this is the criteria that the Company seeks to have the Department apply when determining the effectiveness of the PBR plan under DTE 96-50. Would this criteria apply in the future when evaluating the proposed PBR plan?

DTE 6-16 Refer to Exh. KEDNE/LRK-1, at 1. With reference to Dr. Kaufmann's prior testimony on PBR issues, please identify each and every person and entity on whose behalf such testimony was filed and each and every forum where such testimony was filed.

DTE 6-17 Refer to Exh. KEDNE/LRK-1, at 9. Please explain the reason for not including research and development costs as part of the industry's total cost of gas distribution when constructing the total factor productivity ("TFP") index.

DTE 6-18 Refer to Exh. KEDNE/LRK-1, at 10. Please justify the use of the multifactor productivity index for the U.S. private business sector as the "best available proxy" for the TFP growth of the U.S. economy. In your response, discuss the

difficulties involved in calculating a multifactor productivity index for the utility (gas distribution) sector of the U.S. economy.

DTE 6-19 Refer to Exh. KEDNE/LRK-1, at 16 - 17. Please provide the empirical basis for Dr. Kaufmann's belief that "the 0.15% consumer dividend proposed in Mr. Bodanza's testimony is reasonable and reflects a realistic assessment of the level of additional efficiencies available for the Company to capture during the period of its second PBR plan."

DTE 6-20 Refer to Exh. KEDNE/LRK-1, at 17. Please explain the reason why the Company did not include an accumulated inefficiencies factor in the calculation of the X factor.

DTE 6-21 Refer to Exh. KEDNE/LRK-2, at 3. Please explain the reason why the Company limited the sample period to 1990-2000.

DTE 6-22 Refer to Exh. KEDNE/LRK-2, at 8. The Company states that the "TFP trend calculations are based on high quality data for 16 Northeastern gas distributors." Please define "high quality data" as used here.

DTE 6-23 Refer to Exh. KEDNE/LRK-2, at 10. Please explain the sample selection method used to select the gas distribution companies included in the "Northeast Sample for the Industry TFP Trend Research" (Table 1). Submit all worksheets/computer printouts in support of your response.

DTE 6-24 Refer to Exh. KEDNE/LRK-2, at 10. Please explain how the sample size used in the research (Table 1) was determined. Submit all worksheets/computer printouts in support of your response.

DTE 6-25 Refer to Exh. KEDNE/LRK-2, at 10. Please explain why only one Massachusetts gas distribution company (Boston Gas) was included in the sample. In your response, discuss the economic and statistical justification for excluding the other Massachusetts gas distribution companies from the sample.

DTE 6-26 Refer to Exh. KEDNE/LRK-2, at 10. Please specify which of the gas distribution companies included in the sample (Table 1) are joint gas and electric utilities.

DTE 6-27 Refer to Exh. KEDNE/LRK-2, at 10. Please explain whether the number of customers in Table 1 include also transportation-only customers who by-pass the utilities' distribution system.

DTE 6-28 Refer to Exh. KEDNE/LRK-2, at 11. Please support the Company's contention that a "period of 10 years is often deemed to be sufficient to fulfill this goal [sample period] in regulatory proceedings."

DTE 6-29 Refer to Exh. KEDNE/LRK-2, at 11-12. Please explain the difficulties involved in using data for all Northeast Gas Distributors for the period 1990-2000 in calculating the TFP differential. Please provide a list of all gas distribution companies in the Northeast.

DTE 6-30 Refer to Exh. KEDNE/LRK-2, at 11-16. Please explain how the study tested for sample selection bias in the calibration of the X-factor for Boston Gas. Submit all worksheets/computer printouts in support of your response.

DTE 6-31 Refer to Exh. KEDNE/LRK-2, at 18. Please:

(a) Submit copies of the Törnqvist (1936), Teil (1965) and Hall and Jorgensen (1967) seminal discussions referred to in footnotes 4 and 5;

(b) Discuss the advantages and disadvantages of using a service price approach to capital cost measurement vis á vis the other approaches used in the economic and finance literature to measure the cost of capital; and

(c) Discuss if there has been any improvements on the service price approach to capital cost measurement since the seminal works of Törnqvist (1936), Teil (1965) and Hall and Jorgensen (1967).

DTE 6-32 Refer to Exh. KEDNE/LRK-2, at 19. Please justify the selection of 1983 as the benchmark or starting year in constructing the capital quantity index.

DTE 6-33 Refer to Exh. KEDNE/LRK-3, at 2-4. Please explain the sample selection method used in selecting the gas distribution companies included in Table 1. Provide a copy of the sampling frame used in selecting the sample for the study. Submit all worksheets/computer printouts in support of your response.

DTE 6-34 Refer to Exh. KEDNE/LRK-3, at 2-4. Please explain how the total sample size of 43 distributors in Table 1 was determined. Specifically, explain how the total sample size was determined and also how the total sample size was distributed among the various regions. Submit all worksheets/computer printouts in support of your response.

DTE 6-35 Refer to Exh. KEDNE/LRK-3, at 2-4. Please indicate what proportion of gas distribution companies in each region (i.e., Northeast, South Atlantic, North Central, South Central, Southwest, Northwest, and California) are included in the sample of gas distributors in Table 1. Submit all worksheets/computer printouts in support of your response.

DTE 6-36 Refer to Exh. KEDNE/LRK-3, at 2-4. Based on your response to D.T.E. 6-35, please indicate if there is oversampling or undersampling of gas distribution companies from each region included in the total sample for the study. Also explain how the study corrected for oversampling or undersampling, if any. Submit all worksheets/computer printouts in support of your response.

DTE 6-37 Refer to Exh. KEDNE/LRK-3, at 2-4. Please define the geographical boundaries for each region (i.e., Northeast, South Atlantic, North Central, South Central, Southwest, Northwest, and California) used in the study. State the criteria used to divide the country into regions and why?

DTE 6-38 Refer to Exh. KEDNE/LRK-3, at 2-4. Please specify which of the gas distribution companies included in the sample (Table 1) are joint gas and electric utilities.

DTE 6-39 Refer to Exh. KEDNE/LRK-3, at 2-4. Please explain why only one Massachusetts gas distribution company (Boston Gas) was included in the sample. In your response, discuss the economic and statistical justification for excluding the other Massachusetts gas distribution companies from the sample.

DTE 6-40 Refer to Exh. KEDNE/LRK-3, at 2-4. Please explain whether the number of customers in Table 1 include also transportation-only customers who by-pass the utilities' distribution system; and

DTE 6-41 Refer to Exh. KEDNE/LRK-3, at 7. Please justify the assumption that the values of the model parameters (α_0, α_1, and α_2) are constant across companies and over some period of time. Explain how the results of the econometric study will be affected if these assumptions are violated?

DTE 6-42 Refer to Exh. KEDNE/LRK-3, at 6-8. Please indicate any statistical model building procedures used to select the "best possible" econometric cost benchmark model. Submit all worksheets/computer printouts in support of your response.

DTE 6-43 Refer to Exh. KEDNE/LRK-3, at 9. The Company notes that "if the parameter estimates are unbiased and the expected value of $\mu_{i,t}$ is zero, the expected value of the percentage difference between the company's actual cost and that predicted by the model is the percentage difference between the efficiency factor for [Boston Gas] and that of the sample mean firm." Please show theoretically that the parameter estimates are unbiased and that the expected value of $\mu_{i,t}$ is zero.

DTE 6-44 Refer to Exh. KEDNE/LRK-3, at 9-12. Please explain why the Company did not control for the following variables in the cost performance study of Boston Gas:

(a) Weather;

(b) Topography;

(c) The percentage of customer meters that are automated;

(d) The regulatory environment in which a gas distribution company operates;

(e) The number of years that a gas distribution company has been in operation;

(f) Whether a gas distribution company is owned by a foreign company (i.e., a non-U.S. company);

(g) Whether a gas distribution company is owned by an out-of-state company; and

(h) Access to research and development (R&D) initiatives related to gas distribution.

Outline in detail the economic theory that guided the econometric research on the cost performance study of Boston Gas.

DTE 6-45 Refer to Exh. KEDNE/LRK-3, at 9-12. Please explain how the study accounted for any interaction effects between the explanatory variables included in the econometric model. Submit all worksheets/computer printouts in support of your response.

DTE 6-46 Refer to Exh. KEDNE/LRK-3, at 9-12. Please indicate any diagnostic tests performed in the econometric estimation. Also include in your response evidence that shows that the study tested for sample selection bias in the econometric estimation. Submit all worksheets/computer printouts in support of your response.

DTE 6-47 Refer to Exh. KEDNE/LRK-3 ,at 9-14. Please submit the results of the bivariate correlation matrix of the quantitative variables included in the econometric model (Table 3, page 14).

DTE 6-48 Refer to Exh. KEDNE/LRK-3, at 14. Please submit the computer printout of the results shown in Table 3, page 14 ("Translog Cost Function Regression Results").

DTE 6-49 Refer to Exh. KEDNE/LRK-3, at 14. Please indicate the statistical/econometric software(s) used (including the version) to estimate the results shown in Table 3 ("Translog Cost Function Regression Results"). State if there has been an independent review of the reliability of the software used to estimate the model.

DTE 6-50 Refer to Exh. KEDNE/LRK-3, at 15. Please justify the use of "critical values that are appropriate for a 90% confidence level given a large sample." Specifically, explain why "a 90% confidence level" was chosen and not a 95 percent confidence level or a 99 percent confidence level? Also explain how the Company defined "a large sample" in this case.

DTE 6-51 Refer to Exh. KEDNE/LRK-3, at 16. Please estimate the total cost savings for Boston Gas (in dollars) under the previous PBR plan in D.T.E. 96-50 given that the Company achieved a 0.3 percent reduction in costs when the PBR was in effect.